PRACTICAL – 14

PROGRAM -1

AIM- Aim for complex no program  
Write a program the concept of class , object, methods.

CODE-

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| // Define the Complex class  class Complex {  // Attributes for real and imaginary parts  private int real; // real part as an integer  private int imag; // imaginary part as an integer  // Constructor to initialize a complex number  public Complex(int real, int imag) {  this.real = real;  this.imag = imag;  }  // Method to add two complex numbers  public Complex add(Complex other) {  int newReal = this.real + other.real;  int newImag = this.imag + other.imag;  return new Complex(newReal, newImag);  }  // Method to subtract two complex numbers  public Complex subtract(Complex other) {  int newReal = this.real - other.real;  int newImag = this.imag - other.imag;  return new Complex(newReal, newImag);  }  // Method to multiply two complex numbers  public Complex multiply(Complex other) {  int newReal = this.real \* other.real - this.imag \* other.imag;  int newImag = this.real \* other.imag + this.imag \* other.real;  return new Complex(newReal, newImag);  }  // Method to divide two complex numbers  public Complex divide(Complex other) {  double denominator = other.real \* other.real + other.imag \* other.imag;  int newReal = (int)((this.real \* other.real + this.imag \* other.imag) / denominator);  int newImag = (int)((this.imag \* other.real - this.real \* other.imag) / denominator);  return new Complex(newReal, newImag);  }  // Method to display the complex number  public void display() {  if (imag >= 0) {  System.out.println(real + " + " + imag + "i");  } else {  System.out.println(real + " - " + Math.abs(imag) + "i");  }  }  }  // Main class to demonstrate the Complex class functionality  public class Main {  public static void main(String[] args) {  // Creating complex number objects  Complex num1 = new Complex(2, 4); // First complex number (2 + 4i)  Complex num2 = new Complex(1, 2); // Second complex number (1 + 2i)  // Displaying the complex numbers  System.out.println("First Complex Number: ");  num1.display();  System.out.println("Second Complex Number: ");  num2.display();  // Performing addition  Complex sum = num1.add(num2);  System.out.println("Sum: ");  sum.display();  // Performing subtraction  Complex difference = num1.subtract(num2);  System.out.println("Difference: ");  difference.display();  // Performing multiplication  Complex product = num1.multiply(num2);  System.out.println("Product: ");  product.display();  // Performing division  Complex quotient = num1.divide(num2);  System.out.println("Quotient: ");  quotient.display();  }  } |

OUTPUT-

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